Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

DRAFT
Title V, Construction / Operating
Permit: V-05-074 R2
Morehead State University
Morehead, KY 40351
July 18, 2007
Lisa Beckham, Reviewer

SOURCE ID:	21-205-00005
AGENCY INTEREST:	3873
ACTIVITY:	APE20070006

SOURCE DESCRIPTION:

Morehead State University (MSU) is a public institution of higher education that has been issued a Title V operating permit, V-05-074 R1, covering its main campus in Morehead, Kentucky. Currently, MSU is permitted to operate 2 coal-fired indirect heat exchangers, 1 gas-fired indirect heat exchanger, 12 natural gas-fired indirect heat exchangers between 1.0 and 10 MMBtu/hr, Coal/Ash Transfer equipment, and additional insignificant activities. MSU is a major source for NO_x, CO, and SO_2.

Current Permitting Action: Significant Revision, V-05-074 Revision 2

The Division received an application from MSU on July 2, 2007 to modify their existing Title V operating permit. MSU requested the installation of a temporary natural gas fired boiler, to add two alternate operating scenarios, and to add a compliance schedule for Emission Unit 02. On May 11, 2007 MSU was issued a Notice of Violation for emissions of particulate matter from its No.2 coal boiler (Emission Unit 02). A performance test showed that particulate emissions averaged 0.368 lbs/MMBtu. The permitted limit for Emission Unit 02 is 0.27 lbs/MMBtu. To correct the problem MSU submitted a 502(b)(10) change, which was incorporated into Revision 1 of the permit, for the installation of a high efficiency baghouse to serve both coal boilers (Emission Units 02 and 03). Since Emission Unit 02 operates during the heating season, it was believed that the baghouse would be installed and operational before November 1, 2007; however, MSU has been unable to secure funding for the installation of the baghouse. As a result, and in order to comply with permitted emission limits, MSU has proposed not allowing operation of the No. 2 boiler until funding is secured and the new baghouse is installed. In order to provide heat to the facility during this period MSU is proposing renting an 80MMBtu/hr natural gas fired boiler. This permit includes the addition of the natural gas boiler as Emission Unit 05, the requested alternate operating scenarios and a compliance schedule. The requested alternate operating scenarios, will not allow the operation of the coal boilers while the new natural gas unit is in operation. Emissions from the new natural gas boiler do not increase the facility's potential to emit.

COMMENTS:

The following regulations were considered for the revisions to this permit:

APPLICABLE REGULATIONS:

For Emission Unit 05:

401 KAR 59:015, New indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr which commenced on or after April 9, 1972.

401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, applies to each steam generating units commenced after June 9, 1989 that has a maximum design heat input capacity between 10 MMBtu/hr and 100 MMBtu/hr.

- This permit includes two alternate operating scenarios. Under Alternate Operating Scenario 1 the facility will use the two coal fired boilers and the 30.1 MMBtu/hr natural gas boiler to supply heat to the facility, but is prohibited from using the new temporary natural gas boiler (Emission Unit 05). Under Alternate Operating Scenario 2 the facility will use the new natural gas boiler and the 30.1 MMBtu/hr natural gas boiler to supply heat to the facility, but is prohibited from using the two coal-fired boilers.

- Emission Unit 02 shall not be operated until a new baghouse has been installed. The new baghouse shall have a minimum of 95 percent removal efficiency. Within 30 days of completion of construction of the baghouse and start-up of the coal fired boiler, the permittee shall conduct a performance tests for PM and HCl. The high and low-pressure levels across the baghouse, normal for the process, shall be determined during the performance test. The permittee shall submit to the Division a revised CAM plan no later than 180 days following start-up and performance test completion of the new baghouse.

EMISSION AND OPERATING CAPS DESCRIPTION:

Emission Unit 05 Temporary Indirect Heat Exchanger

This 80 MMBtu/hr unit is to be installed prior to the 2007 heating season and will be used temporarily until a new baghouse is installed for the coal-fired boilers. While burning natural gas, compliance for this unit is assured for sulfur dioxide emissions, particulate emissions, and opacity limitation standards. This unit is not allowed to be in operation when Emission Units 02 and 03 are in operation.

Pursuant to 401 KAR 59:015, Section 4(1)(a), particulate matter emissions shall not exceed 0.10 lb/MMBtu based on a three-hour average.

Pursuant to 401 KAR 59:015, Section 4(2)(b), visible emissions shall not exceed twenty (20) percent opacity based on a six-minute average, except that a maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) minutes during cleaning the fire-box or blowing soot.

Pursuant to 401 KAR 59:015, Section 4(2)(c), visible emissions shall not exceed twenty (20) percent opacity based on a six-minute average, except during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

Pursuant to 401 KAR 59:015, Section 5(1)(c), sulfur dioxide emissions shall not exceed 0.80 lb/MMBtu based on a twenty-four-hour average.

Pursuant to 401 KAR 60:005, incorporating by reference 40 CFR 60.43c (d), the PM and opacity standards apply at all times except during periods of startup, shutdown, or malfunction

PAST PERMITTING ACTION: SIGNIFICANT REVISION V-05-074 REVISION 1

The Division received an application from MSU on December 21, 2006 to modify their existing Title V operating permit. MSU is proposing the addition of source-wide federally enforceable limits on coal usage to preclude the applicability of 40 CFR 63 Subpart DDDDD (Boiler MACT). As part of the application, MSU completed an emission inventory of all existing facilities and compiled a list of existing small natural gas boilers, emergency generators, and emergency diesel fire pumps not previously listed in the permit. The emissions from these existing small boilers, generators, and fire pumps were included in the calculations to determine the source-wide limit. Twelve (12) gas boilers ranging in size from 1.0 MMBtu/hr and less than 10 MMBtu/hr heat input have been collectively added to the permit as Emission Unit 10. The remaining small boilers, generators, and fire pumps have been added to the insignificant section of the permit. The Division has determined that this permitting action is a significant revision pursuant to 401 KAR 52:020 due to changes made to monitoring, recordkeeping, and reporting requirements. It is not considered a major modification pursuant to 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality due to the decrease in potential emissions of criteria pollutants. MSU is limiting their coal usage to 15,000 tons per year (12 – month rolling total) so that the combined hazardous air pollutant (HAPs) emissions remain below 22.5 tons per year and 9.0 tons per year for any single HAP including HCl, thereby, becoming a synthetic minor source of HAPs and precluding the Boiler MACT. Additionally on May 8, 2007, MSU submitted to the Division a 502(b)(10) change application to install a new baghouse on the coal fired boilers and requested that this change be included in with the current permitting action. These changes have been incorporated into the permit.

COMMENTS:

The following regulations were considered for the proposed revisions to this permit:

APPLICABLE REGULATION:

For Emission Unit 10:
401 KAR 59:015, New indirect heat exchangers, applicable to an emissions unit with a capacity of less than 250 MMBtu/hr which commenced on or after April 9, 1972;

NON-APPLICABLE REGULATION:

40 CFR 63 Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Institutional, Commercial, and Industrial Boilers and Process Heaters; applicability date of September 13, 2007, does not apply to Emission Units 02 and 03. The permittee has elected to take voluntary federally enforceable operating and emission limitations to preclude the applicability of these standards.

- To preclude the applicability of 40 CFR 63, Subpart DDDDD, MSU is proposing a source-wide coal usage limit of 15,000 tons/yr. This limit was derived utilizing the emission factor 1.2 lb/ton HCl from AP-42 Section 1.1. MSU's average coal usage for the past five years is 6888 tons/year. Also, MSU reports using the same type coal from the same vendor as the University of Kentucky (UK) and Eastern Kentucky University (EKU). EKU had previously conducted voluntary stack emissions testing for HCl on their coal units EU 01 and EU 04 in December of 2004. The individual test emission results averaged over the three test runs per unit were 0.30 lb/ton for EU 01 and 0.34 lb/ton for EU 04. UK had previously conducted voluntarily stack emissions testing for HCl on their coal units EU 08, EU 13 (3), and EU 13 (4) in July of 2006. The individual test emission results averaged over the three test runs per unit were 0.230 lb/ton for EU 13 (3), 0.333 lb/ton for EU 13 (4), and 0.013 lb/ton for EU 08. The Division has agreed to allow the source-wide coal usage permit limit for MSU to be set using the AP-42 emission factor since it does provide for a stricter limit when compared to the emission rates of the above stack emissions tests. However, the Division is requiring MSU to conduct stack testing within 30 days of the startup of the coal boilers following installation of the new baghouse and to use the actual stack emission rates for continual compliance determination with the equations provided in the permit.

- The application included a request to limit the operating hours each emergency generators to 200 hours per year. Upon further evaluation, the Division has determined that the potential emissions from the emergency generators calculated at 500 hours and considering emissions from the coal use limit, would not cause MSU to exceed the net significant increase thresholds defined in 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality, for all criteria and hazardous air pollutants. Therefore, including the 200-hour limit in the permit, may unduly limit MSU's ability to respond to emergency situations. MSU concurs with this determination and has requested the Division not to include this limit in the permit. Additionally, emissions from insignificant activities when added to the source's significant emissions cannot cause the source to exceed major threshold levels or emission limits listed in the permit

- Changes were made to the Specific Testing, Monitoring, Recordkeeping, and Reporting Requirements for each emission unit to account for additional requirements needed to assure compliance with the new limitations and to provide greater clarity.

- **Section F – Monitoring, Record Keeping, and Reporting Requirements** and **Section – G General Provisions** were revised to reflect the current language and nomenclature used by the Division in the current template used for issuing Title V permits.

- The new baghouse to be installed in 2007 shall have a minimum of 95 percent removal efficiency. Within 30 days of completion of construction of the baghouse and start-up of the coal
  fired boilers, the permittee shall conduct a performance tests for PM and HCl. The high and low-pressure levels across the baghouse, normal for the process, shall be determined during the performance test. The permittee shall submit to the Division a revised CAM plan no later than 180 days following start-up and performance test completion of the new baghouse.

EMISSION AND OPERATING CAPS DESCRIPTION:

SOURCE-WIDE

To preclude 40 CFR 63, Subpart DDDDD, the source-wide usage rate of coal from all affected facilities shall not exceed 15,000 tons per year (12 month rolling total) and shall further be restricted such that the emission limitations as set forth in the permit for hydrogen chloride at 9.0 tons per year of any single HAP and combined HAPS at 22.5 tons per year are not exceeded. The permittee shall demonstrate compliance with these limitations by using the calculations listed in the permit, tracking source-wide fuels usage from all emission points, for all fuels types, and for emissions from insignificant activities. Additionally, the permittee shall notify the Division at least sixty (60) days prior to any change in coal supplier, fuel type, or fuel mixture, used in EU 02 and 03, from those fuels used in the stack tests to establish the HCl emission factor in the permit's equations for determining compliance. This notification shall include a fuel analysis of the new fuel conducted per procedures listed in 40 CFR 63.7521 and Table 6 of 40 CFR 63 Subpart DDDDD for Hydrogen Chloride. The Division may request additional stack testing be completed in addition to this fuel analysis.

EMISSION UNIT 10

For Emission Unit 10, pursuant to 401 KAR 59:015, Section 4(1)(c), particulate emissions shall not exceed 0.26 lb/MMBtu based on a three-hour average and Section 5(1)(c), sulfur dioxide emissions shall not exceed 0.80 lb/MMBtu based on a twenty-four-hour average. Pursuant to 401 KAR 59:015, Section 4(2)(b), visible emissions shall not exceed twenty (20) percent opacity based on a six-minute average, except that a maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) minutes during cleaning the fire-box or blowing soot. Compliance of this emission unit is assured for sulfur dioxide emissions, particulate emissions, and opacity limitation standards while burning natural gas.

PAST PERMITTING ACTION: RENEWAL TITLE V PERMIT V-05-074

Morehead State University has applied to the Division for Air Quality for the renewal of their Title V permit (V-99-052, Revision 1) for the operation of three steam boilers, coal & ash handling operations, coal storage and natural gas piping facilities. The existing emission sources include a 76 MMBtu/hr rated Spreader stoker coal-fired indirect-heat-exchanger with multicylcone and baghouse (emission unit 02); a 36.7 MMBtu/hr rated Underfeed stoker coal-fired indirect-heat-exchanger with multicyclone (emission unit 03); a 31 MMBtu/hr natural gas fired, Scotch Marine Fire tube steam boiler (emission unit 04); and insignificant activities (coal/ash handling and waste incinerator).

COMMENTS:

- Emission Unit 01 demolition has been completed and will be removed from further Title V permitting considerations and requirements.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.